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Personal Cooling System

U.S. Patent Application of:
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"Express mail" mailing label number
EU534213785US

Date of Deposit: Sept 16, 03

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1 IN THE UNITED STATES PATENT & TRADEMARK OFFICE
2 Washington D.C. 20231

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4 Application for US Letters "PATENT"

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6 PERSONAL COOLING SYSTEM

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8 RELATED DOCUMENTS

9 No related documents or priorities are claimed.

10 BACKGROUND

11 This invention relates to a device for personal hygiene and for comfort.
12 More particularly, it relates to the use of thermo-electric technology in a compact,
13 portable, pocket-sized device for personal cooling or warming to give relief from
14 hot flashes/overheat or chills for anyone, anywhere.

15 THE PROBLEM

16 Portable personal cooling devices (for example a battery-operated hand-
17 held fans, ice bags or chemical cooling or heating packs) are of limited
18 effectiveness and therefore, not very practical when one considers how
19 cumbersome and inconvenient they are. The purpose of this invention is to
20 provide a personal cooling/warming system that uses solid-state electronics and
21 is, therefore compact, fast, efficient and resilient, requiring no compressors, CFC
22 gases or coolant coils.

23 When people exert themselves in play or work, their body temperatures
24 rapidly rise. Additionally, some physiological conditions, for example, female

1 menopause, can cause frequent, uncomfortable sensations of chilling or
2 overheat ("hot flashes") accompanied by profuse perspiration. Dealing with
3 these can be difficult and inconvenient, particularly in public places or while on
4 the job.

5 With respect to "hot-flashes," it is common knowledge that they are often
6 concentrated at nodes in the vicinity of points where arteries pass near the
7 surface of the skin. (These are most often identified as being the points where
8 pulse can be measured.) If these nodes are cooled, then relief is quickly
9 experienced and the rapid circulation of cooled blood carries on to the brain.
10 With this quick rush of soothing relief also often comes a disproportionately
11 calming effect leaving the user more relaxed and confident.

12 However, consistent and convenient access to such relief has been
13 difficult. Ice cubes or chemical packs have been used to cool nodal points, but
14 they are, as mentioned, hard to transport or preserve and can be messy or bulky
15 to use. In example, one would be hard pressed to use bulky cooling packs or
16 melting ice cubes while participating in sports, riding a train, giving a public
17 presentation, or even merely walking on the street.

18 This invention provides the relief desired while overcoming all the above
19 disadvantages of prior art.

20 SUMMARY

21 This invention comprises a thermo-electric module that, in turn, comprises
22 a solid-state thermo-electric chip. The invention also comprises a heat-sink, a

1 "cold-sink" and a direct current power source as well as a switch and associated
2 hardware.

3 The preferred embodiment uses two "D" size dry cells as a direct current
4 power source incased in a housing attached to a head containing the thermo-
5 electric module. The housing also serves as a convenient handle.

6 PRIOR ART

7 The primary forms of prior art are battery operated cooling fans, cooling
8 pads and hot pads.

9 US patent 6,125,636, issued to Taylor and Fai Lau, teaches a thermo-
10 voltaic device mounted on a headband such that it can be affixed in the center of
11 the forehead. The device is powered and controlled by a self-contained battery
12 source with reversible polarity, allowing it to heat or cool the brow as the user
13 desires. This invention is designed to be used to cool only one point on the body
14 (the forehead) and must be used in an overt, rather than discrete, manner.
15 Although it might be appropriate for use during sporting activities, it would not be
16 acceptable in most social situations.

17 US patent 5,956,963, issued to Lerner teaches a chemical cooling unit to
18 be worn on the wrist. This system is not controllable and is designed for use
19 upon only one point on the body (the wrist). The chemical cooling agent may be
20 used only once, after which it must be discarded and replaced. It cannot produce
21 warming energy. As with the previously described (Taylor) device, it must be
22 used in an overt, rather than discrete manner, and would not be appropriate in
23 more formal social situations.

1 None of the prior art overcomes the difficulties mentioned in "PROBLEMS"
2 above, or provides all the features or meets the objectives of this system as
3 enumerated below.

4 OBJECTIVES

- 5 1. One objective of this invention is to provide a method, device and a
6 system for personal hygiene and cooling/heating.
- 7 2. Another objective of this invention is to provide a system as described
8 in objective 1 that is solid state, having virtually no moving parts.
- 9 3. Another objective of this invention is to provide a system as described
10 in objective 1 that it be long lasting and durable.
- 11 4. Another objective of this invention is to provide a system as described
12 in objective 1 that is easy to use, store and carry in a purse or pocket,
13 or on a belt like a pager.
- 14 5. Another objective of this invention is to provide a system as described
15 in objective 1 the use of which is intuitive, requiring little instruction or
16 training.
- 17 6. Another objective of this invention is to provide a system as described
18 in objective 1 that is safe in both normal and extreme or accidental
19 situations.
- 20 7. Another objective of this invention is to provide a system as described
21 in objective 1 that is environmentally friendly, and to the extent
22 possible, biodegradable when discarded as refuse.

- 1 8. Another objective of this invention is to provide a system as described
2 in objective 1 that meets all federal, state, and local guidelines,
3 recommendations and standards, public or private with respect to
4 safety, quality, energy consumption and environmental friendliness.
- 5 9. Another objective of this invention is to provide a system as described
6 in objective 1 that provides quick relief from heat and perspiration or
7 chills.
- 8 10. Another objective of this invention is to provide a system as described
9 in objective 1 that is constructed of modular parts and units that can
10 easily interface with each other.
- 11 11. Another objective of this invention is to provide a system as described
12 in objective 1 that is suitable as an accessory for OEM.
- 13 12. Another objective of this invention is to provide a system as described
14 in objective 1 that is suitable for use virtually anywhere.
- 15 13. Another objective of this invention is to provide a system as described
16 in objective 1 that is suitable for use by anyone at all.
- 17 14. Another objective of this invention is to provide a system as described
18 in objective 1 that is suitable for gift giving.
- 19 15. Another objective of this invention is to provide a system as described
20 in objective 1 that is suitable for promotional gifts complete with a
21 message from the sponsor.
- 22 16. Another objective of this invention is to provide a system as described
23 in objective 1 that is of high esthetic quality and appealing appearance.

1 17. Another objective of this invention is to provide a system as described
2 in objective 1 that has a small footprint.

3 18. Another objective of this invention is to provide a system as described
4 in objective 1 that is capable of cooling to sub-zero temperatures.

5 Other objectives of this invention reside in its simplicity, elegance of
6 design, ease of manufacture, service and use and even esthetics, as will
7 become apparent from the following brief description of the drawings and
8 concomitant description.

9 BRIEF DESCRIPTION OF THE DRAWINGS

- 10 a). Fig. 1 is a side view of the invention.
11 b). Fig. 2 displays front and back views thereof.
12 c). Fig. 3 shows plan views from the top and from the bottom.
13 d). Fig. 4 is a cut-away side view of this invention.
14 e). Fig. 5 shows the thermo-electric module, solid-state chip, "cold-sink"
15 and power source.

16 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

17 The compact, convenient and solid state personal cooling/warming system
18 of this invention as shown in the drawings wherein like numerals represent like
19 parts throughout the several views, generally disclosed the invention in figures 1
20 through 5.

21 The overall system 100 of this invention comprises a thermo-electric
22 module 90 that, in turn, comprises a solid-state thermo-electric chip 70. The
23 system also includes a heat sink 40 and a "cold sink" 60, a direct current power

1 source 15 as well as a switch 30 and standard but essential hardware means of
2 connecting, interfacing and integrating the several parts 80 (not illustrated).

3 The preferred embodiment uses two "D" sized cells 20 for the direct
4 current power source 15 in a rounded housing 10 that may, optionally, be
5 foldable via a hinge 55 over the thermo-electric module 90. The housing 10 also
6 serves as a convenient handle.

7 Fig. 3 shows the interface between the thermo-electric module's solid
8 state chip and the "cold sink" in greater detail. In the preferred embodiment, the
9 inventor also used Melcor model CP.8-71-06L TM as the thermo-electric chip 70.
10 The approximate cooling area of the device is forty-thousand square millimeters
11 or sixty square inches.

12 The solid state electronic cooling thermo-electric chip is 21st Century
13 technology. Without bulky compressors, CFC gases and coils, the chip cools. It
14 can cool up to sub-zero temperatures and beyond. They can be designed to
15 various BTU capacities. Their life is at least 200,000 hours, guaranteed.

16 A 30 to 50 BTU thermo-electric chip is attached to an anodized
17 aluminum/copper heat-sink by the help of thermal epoxy. A copper or aluminum
18 button ("cold-sink") having a 1 to 2 inch diameter is in contact with the cold side
19 of the chip. The chip is energized by dry cells (conventional or rechargeable) 20
20 housed in the handle 10. The entire apparatus is enclosed in a "hair brush" like
21 mold. The switch 30 extends about 1/8 of an inch on one side and the heat sink
22 is exposed to ambient air on the other side. A slide switch activates the
23 UBKoolTM personal cooling system of this invention.

1 The use and operation of this device is simple and intuitive. The operator
2 merely unfolds the device, switches it on and touches it to the desired area of the
3 body or gently rubs it over the area for effective conduction of heat away from the
4 skin.

5 The super cold button ("cold-sink") may be gently pressed against any
6 spot on the human body to effectively and efficiently cool that particular area.
7 Yet, the UBKool is so small that it can be carried in a purse or pocket or worn on
8 the belt like a cell phone.

9 The following description is intended to be non-limiting. The broad
10 simplicity of this design makes it difficult to "design around." Nonetheless, many
11 changes may be made to this design without deviating from the spirit of the
12 invention. Examples of such variations contemplated include the following:

- 13 1. The shape and size of material of the various components may be
14 modified.
- 15 2. A different thermoelectric module may be used.
- 16 3. The color, aesthetics and materials may be enhanced or varied.
- 17 4. Additional complimentary functions and features may be added.
- 18 5. A more economical version of the device may be adapted with an
19 informational or advertising message for promotional gifts.
- 20 6. A different type of handle may be provided.

21 Other changes such as aesthetic alterations and substitution of newer
22 materials as they become available, that perform substantially the same

1 function in substantially the same manner with substantially the same
2 result may be made without deviating from the spirit of the invention.

3 The following is a listing of the components using the preferred
4 embodiment arranged in ascending order of the reference numerals for
5 convenient use of the reader.

6	10	=	housing and handle
7	15	=	direct current power source
8	20	=	cells
9	30	=	switch
10	40	=	heat sink
11	50	=	thermo-electric module holder
12	55	=	optional hinge between handle 10 and module holder
13			50
14	60	=	"cold sink" aluminum plate
15	70	=	thermo-electric chip
16	80	=	hardware such as screws, washers, nuts, etc. (not
17			illustrated)
18	90	=	thermo-electric module
19	100	=	personal cooling system generally (in total)

20 DEFINITIONS AND ACRONYMS

21 Great care has been taken to use words according to their conventional
22 dictionary definitions. Nevertheless, the following definitions are included below
23 for clarity.

1	3D	=	Three Dimensional
2	CFC	=	Carbon Fluoro-Carbon gases
3	DIY	=	Do It Yourself
4	Integrated	=	Two entities combined such that they act as one
5	Interface	=	Junction between two dissimilar entities
6	Isometric	=	Characteristic of drawings such that they display
7			equality of dimensions with the prototype after which .
8	OEM	=	Original Equipment Manufacturer
9	Symmetrical	=	Characteristic of the shape of an object or integrated
10			entity such that it can be split along a given axis and
11			the two halves with form mirror images of each other.
12	Thermo-electric	=	Characteristic of a device whereby it has both thermal
13			and electrical properties

14 While this invention has been described with reference to
 15 illustrative embodiments, this description is not intended to be construed in
 16 a limiting sense. Various modifications and combinations of the illustrative
 17 embodiments as well as other embodiments of the invention will be
 18 apparent to a person of average skill in the art upon reference to this
 19 description. It is, therefore, contemplated that the appended claim(s)
 20 cover any such modifications, embodiments as fall within the true scope of
 21 this invention.

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